

Applicant : John Mantegna et al.  
Serial No. : 09/845,083  
Filed : April 30, 2001  
Page : 2 of 9

Attorney's Docket No.: 06975-148001 / Processing 05

#### Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

#### Listing of Claims:

1. (currently amended) A method for dynamic latency management in a real-time electronic communication comprising:
  - measuring a communication delay arising from a receiving data buffer;
  - determining a latency adjustment necessary to adjust the size of the communication delay to within a predetermined range;
  - determining an optimal range for a size of the communication delay based on the measured communication delay; and
  - modifying a number of samples of a playback data block passing through the receiving data buffer based on the latency adjustment necessary to adjust the size of the communication delay measured communication delay and on the optimal range for the size of the communication delay.
2. (original) The method of claim 1 wherein the number of samples is modified without introducing audible artifacts.
3. (original) The method of claim 1 wherein measuring the communication delay comprises measuring an instantaneous communication delay associated with the receiving data buffer.
4. (original) The method of claim 3 wherein measuring the communication delay comprises:
  - measuring the instantaneous communication delay associated with the receiving data buffer two or more times; and
  - averaging the measurements.

5. (original) The method of claim 1 wherein the real-time electronic communication includes an audio communication.
6. (original) The method of claim 1 further comprising determining receiving data buffer delay upper and lower bounds.
7. (original) The method of claim 1 wherein modifying the number of samples comprises performing heuristic resampling of a playback block.
8. (original) The method of claim 7 wherein performing heuristic resampling comprises:  
analyzing multiple consecutive samples of audio data in the playback block;  
identifying consecutive samples with minimal variation in a parameter of their data; and  
adjusting the number of samples in the identified consecutive samples.
9. (original) The method of claim 8 wherein adjusting the number of samples comprises removing a sample from the identified consecutive samples.
10. (original) The method of claim 8 wherein adjusting the number of samples comprises adding a sample to the identified consecutive samples.
11. (currently amended) A computer program, residing on a computer-readable medium, for dynamically managing latency in a real-time electronic communication, comprising instructions for causing a computer to:  
measure a communication delay arising from a receiving data buffer;

determine a latency adjustment necessary to adjust the size of the communication delay within a predetermined range;

determine an optimal range for a size of the communication delay; and

modify the number of samples of a playback data block passing through the receiving data buffer based on the latency adjustment necessary to adjust the size of the communication delay and on the optimal range for the size of the communication delay.

12. (original) The computer program of claim 11 further comprising instructions for causing a computer to modify the number of samples without introducing audible artifacts.

13. (original) The computer program of claim 11 wherein instructions for causing a computer to measure a communication delay comprise instructions for causing a computer to measure an instantaneous communication delay associated with the receiving data buffer.

14. (original) The computer program of claim 13 wherein instructions for causing a computer to measure the communication delay comprise instructions for causing the computer to:

measure the instantaneous communication delay associated with the receiving data buffer two or more times; and

average the measurements.

15. (original) The computer program of claim 11 wherein the real-time electronic communication includes an audio communication.

16. (original) The computer program of claim 11 further comprising instructions for causing a computer to determine receiving data buffer delay upper and lower bounds.

17. (original) The computer program of claim 11 wherein instructions for causing a computer to modify the number of samples further comprise instructions for causing a computer to perform heuristic resampling of a playback block.

18. (original) The computer program of claim 17 wherein instructions for causing a computer to perform heuristic resampling comprise instructions for causing a computer to:

- analyze multiple consecutive samples of audio data in the playback block;
- identify consecutive samples with minimal variation in a parameter of their data; and
- adjust the number of samples in the identified consecutive samples.

19. (original) The computer program of claim 18 wherein adjusting the number of samples comprises removing a sample from the identified consecutive samples.

20. (original) The computer program of claim 18 wherein adjusting the number of samples comprises adding a sample to the identified consecutive samples.

21. (currently amended) A computer system running programmed processes comprising a process for dynamically managing latency in a real-time electronic communication, which process causes the computer system to:

- measure a communication delay arising from a receiving data buffer;
- determine a latency adjustment necessary to adjust the size of the communication delay to within a predetermined range;
- determine an optimal range for a size of the communication delay based on the measured communication delay; and
- modify the number of samples in a playback data block passing through the receiving data buffer based on the latency adjustment necessary to adjust the size of the communication

~~delay measured communication delay~~ and based on the optimal range for the size of the communication delay.

22. (original) The computer system of claim 21 wherein the number of samples is modified without introducing audible artifacts.
23. (original) The computer system of claim 21 wherein measuring the communication delay comprises measuring an instantaneous communication delay associated with the receiving data buffer.
24. (original) The computer system of claim 23 wherein measuring the communication delay comprises:
  - measuring the instantaneous communication delay associated with the receiving data buffer two or more times; and
  - averaging the measurements.
25. (original) The computer system of claim 21 wherein the real-time electronic communication includes an audio communication.
26. (original) The computer system of claim 21 wherein the process for dynamically managing latency further causes the computer system to determine receiving data buffer delay upper and lower bounds.
27. (original) The computer system of claim 21 wherein modifying the number of samples comprises performing heuristic resampling of a playback block.
28. (original) The computer system of claim 27 wherein performing heuristic resampling comprises:

analyzing multiple consecutive samples of audio data in the playback block;  
identifying consecutive samples with minimal variation in a parameter of their data; and  
adjusting the number of samples in the identified consecutive samples.

29. (original) The computer system of claim 28 wherein adjusting the number of samples comprises removing a sample from the identified consecutive samples.

30. (original) The computer system of claim 28 wherein adjusting the number of samples comprises adding a sample to the identified consecutive samples.